

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-003729**Date Inspected:** 24-Aug-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 2200**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 800**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG/Tower**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Sherri Brannon arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions. While on site the QA Inspector observed and or discovered the following.

**OBG Sub-Assembly Shop – Bay 1 (Deck Panel)**

Quality Assurance (QA) Inspector Brannon was present to monitor activities associated with the Production Monitoring Test (PMT) of Orthotropic Box Girder (OBG) Deck Panel U-rib welds. The PMT representing Deck Panels DP117-002 a 4 closed rib panel and DP90-001 a 3 closed rib panel was monitored on Gantry #1. After MT of the tack welds was accepted by ZPMC Level II MT Technician, Bo Tin Yue, the three ribs (six welds) were simultaneously welded to the simulated deck plate in the horizontal groove (2G) welding position on (3) a single steel plate. The Welding Procedure Specification (WPS) used was WPS-B-T-2342-U1(Urib)-4. It is a combination procedure using gas metal arc welding (GMAW) for the root pass and submerged arc welding (SAW) for the cover or fill pass. The filler metals being used were verified to be as specified on the WPS; 1.4 mm diameter, ER70S-6 (JM-56) for GMAW and 4.8 mm diameter EH14K (H14) for SAW. During the test, QA Inspector Brannon recorded the parameters of amperage, voltage, and travel speed on the U-Ribs PMT Inspection Sheet, dated 08-24-2008, for both welding processes. The name of the gantry operator and each of the six welding operators' identification numbers were also recorded on the U-Ribs PMT Inspection Sheet. ZPMC Certified Welding Inspector (CWI), Mr. Sun Bo and ABF QA Inspector Mr. Huang Wen Guang were present during welding.

After ZPMC Certified Welding Inspector (CWI), Mr. Sun Bo and ABF QA Inspector Mr. Huang Wen Guang

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performed visual inspection, Quality Assurance (QA) Inspector Brannon performed random visual inspection of the GMAW tack welds, GMAW root pass and the SAW cover pass, items observed appear to comply with project specifications. Following completion of the welding ZPMC QC CWI Inspector Mr. Sun Bo marked a 500 mm length of the welds as being the areas that are to be representative of this PMT test. QA Inspector Brannon observed ZPMC NDE inspector Mr. Ma Jo Long performing ultrasonic testing on the partial penetration evaluation of each of the six welds in the areas where Mr. Sun Bo had marked for PMT testing. Following Mr. Long's UT acceptance the QA Inspector Brannon marked a total of 15 locations where macroetch samples are to be obtained. ZPMC then cut and prepared the macroetch samples. ZPMC QC CWI Inspector Mr. Sun Bo, ABF representative Mr. Huang Wen Guang and Caltrans QA Inspector Brannon visually inspected these macroetch samples and documented their acceptance on the ZPMC "Production Monitoring Test Plate Inspection Report sheet dated 08-24-2008, items observed by the QA Inspector Brannon appear to generally comply with project specifications.

The QA Inspector recorded information for all fifteen PMT specimens on an Excel spreadsheet titled "SAS OBG PMT Macroetch Log" and a copy of this file is posted on the Caltrans "Team China" internal common drive which is accessible to all Quality Assurance personnel including Task Leaders and Structural Materials Representatives.

OBG-PMT, Deck Panel DP117-002 & DP90-001

All tack welds are 5mm to 10mm on either side of the 75mm tack weld.

OBG-Deck Panel DP117-002

ZPMC MT Technician Bo Tin Yue found 10 cracked tack out of 208 tack welds in DP117-002. Deck Panel DP90-001 to be MT on the next shift.

Bay 2 Sub Assembly Shop QA Observations:

Caltrans QA Inspector observed Bay 2 to be idle during this shift.

Bay 8- Sub Assembly Shop - Tower Double Diaphragm

Caltrans QA Inspector observed the tower double diaphragm to be idle during this shift.

Tower Shop-Bay 1

In-Process Welding – 1) QA Inspector randomly observed ZPMC in the process of performing PJP weld using a gantry system for the South Tower Skin Assembly, Skin B using a FCAW process on this date.

2) QA Inspector randomly observed ZPMC in the process of performing CJP repair welding for the South Tower Skin Assembly, Skin A using a FCAW process. ZPMC welding repair report # T-WR134 and UT reject report #T787-UT-338 on this date.

Tower Shop-Bay 2

In-Process Welding – 1) QA Inspector randomly observed ZPMC in the process of performing PJP weld using a gantry system for the East Tower Skin Assembly, Skin E using a FCAW process on this date.

2) QA Inspector randomly observed ZPMC in the process of spot welding using an FCAW process for the East Tower Skin Assembly, Skin B were ZPMC QC had preformed visual inspection. QA Inspector noticed that ZPMC welder was welding without preheating prior to welding (plates were warm to the touch but not the required 65°C). QA spoke with CWI Mr. Jiang Jian Fei and ABF Mr. Luo Lai Quan and they agreed, preheat was

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placed on the remaining area's to be welded. QA Inspector informed ZPMC CWI Mr. Jiang Jian Fei, ABF Mr. Luo Lui Quan and ZPMC Mr. Xu Jun. QA An Incident report was written on the above.

### Summary of Conversations:

As stated with in this report.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Ady Velasco 13816942685, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Brannon, Sherri	Quality Assurance Inspector
<b>Reviewed By:</b>	Lanz, Joe	QA Reviewer

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